

Statement of Work

Proton irradiations to support the evaluation and testing of various advanced technologies for the suitability for space use. The facility is to provide the proton beam and necessary dosimetry system and irradiation area to expose several different devices in air to a variety of proton fluences. The Naval Research Laboratory (NRL) is providing the test devices and test system. The facility is to provide all necessary support in cyclotron operation, set up support, and operations and provide printed and computer records of dosimetry measurements for all runs. When necessary and as required, the facility will provide a mapping of the beam uniformity.

NRL need a beam that is extremely uniform (better than 10%) over an area of 22 cm diameter and with a real-time dosimetry system that can provide both particle fluence and total dose with accuracy of better than 10%. The beam needs to be stable over periods of hours and reliable (minimal accelerator interruptions) to allow for extended irradiations. The irradiations must be performed in air and with an accurate positioning system to allow for irradiations at angles up to and approaching 90-degrees with respect to the device positioning system must also allow for irradiations at angles up to and approaching 90-degrees with respect to the device surface normal. There must be room at the irradiation site for extensive support equipment that will require shielding for the proton beam and secondary radiation. The facility must provide a person to serve as a liaison to the NRL team to provide for scheduling, shipping, setup support, run time operation, and other items to facilitate the experiments. The facility must have a computer dosimetry system capable of accurate beam control and monitoring and provide output files to document each run. All interface wiring between the irradiation site and the location of the dosimetry system must be provided so the computer test equipment can be co-located. Proton beam energies will need to be between 8 MeV and 65 MeV to match the spectrum of space particles with minimum energy straggle with beam flux ranges from 10^2 to 10^8 protons/cm²/second.